

Marcin Lukasz Witek

Curriculum Vitae

Work address: *Jet Propulsion Laboratory, 4800 Oak Grove Drive, Pasadena, CA 91109*
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Education:

2008 – Ph.D., Physics (atmospheric science) (with honors), University of Warsaw
Thesis: “Sea salt aerosol in global transport models – results, validations and model improvements”. Advisors – dr Piotr Flatau, Scripps Institution of Oceanography, UCSD, and prof. Szymon Malinowski, Institute of Geophysics, University of Warsaw.

2003 – Master of Science in Physics (atmospheric science), University of Warsaw
“Fast atmospheric radiative transfer code” (in Polish).
Advisors – prof. Szymon Malinowski, Institute of Geophysics, University of Warsaw, and dr Piotr Flatau, Scripps Institution of Oceanography, UCSD.

Professional Experience:

Research Scientist, Aerosol and Cloud Science Group, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA (Mar 2011 – present)

Research Scholar (postdoc), California Institute of Technology, Pasadena, CA (Dec 2008 – Mar 2011)

Field of Research:

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- Boundary layer and cloud parameterization/modeling
 - Boundary layer meteorology
 - Atmospheric aerosol modeling
 - Sea salt aerosol emission parameterization
 - Climate changes and aerosol influence on climate

Research Grants/Fellowships:

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- Office of Naval Research Global. Visiting Scientist Program (VSP). Support for visit to Naval Research Laboratory, Marine Meteorology Division, Monterey, California, USA, summer of 2002.
 - Research Assistantship Program, NATO Undersea Research Centre, La Spezia, Italy, August–October 2006.

Research Activities:

- Cooperation with the Naval Research Laboratory, Monterey, CA on NAAPS modeling and reanalysis – visits in: summer 2002 (ONRIFO project), April 2003, February 2004, winter 2004/2005 and spring 2006.
- Cooperation with the Colorado State University in Fort Collins – visits in February 2005 (two weeks) and spring 2006 (one month).
- Cooperation with the NATO Undersea Research Centre, La Spezia, Italy, August–October 2006.

Major Field Projects:

- UAE², United Arab Emirates, June 2004.
- ADAM, Monterey, CA, April 2003.

Classes (Laboratories):

- Introduction to Radiative Processes in the Atmosphere – Atmospheric Physics Department, UW.
- Introduction to Atmospheric Boundary Layer – Atmospheric Physics Department, UW.

Other Activities:

- Pier reviewer: Journal of Climate, Journal of Atmospheric Sciences, Journal of Geophysical Research, Acta Geophysica, Oceanologia.

Publications:

1. Markowicz, K. M. and **M. L. Witek** (2011): Sensitivity study of the global contrails radiative forcing due to particle shape. *Journal of Geophysical Research – Atmospheres*, accepted.
2. **Witek, M. L.**, J. Teixeira, and G. Matheou (2011): An eddy-diffusivity/mass-flux approach to the vertical transport of turbulent kinetic energy in convective boundary layers. *Journal of Atmospheric Sciences*, **68** (10), 2385–2394.
3. Markowicz, K. M. and **M. L. Witek** (2011): Simulations of contrails optical properties and radiative forcing for various crystal shapes. *Journal of Applied Meteorology and Climatology*, **50**, 1740–1755.
4. **Witek, M. L.**, J. Teixeira, and G. Matheou (2011): An integrated TKE based eddy-diffusivity/mass-flux boundary layer scheme for the dry convective boundary layer. *Journal of Atmospheric Sciences*, **68** (7), 1526–1540.

5. **Witek, M. L.**, P. J. Flatau, J. Teixeira, and K. M. Markowicz (2011): Numerical investigation of sea salt aerosol size bin partitioning in global transport models: Implications for mass budget and optical depth. *Aerosols Science and Technology*, **45**, 401–414.
6. Maciszewska A. E., K. M. Markowicz, and **M. L. Witek** (2010): A multiyear analysis of aerosol optical thickness over Europe and Central Poland using NAAPS model simulations. *Acta Geophysica*, **58** (6), 1147–1163.
7. **Witek, M. L.**, J. Teixeira, and P. J. Flatau (2008): On stable and explicit numerical methods for the advection-diffusion equation. *Math. Comp. Simul.*, **79** (3), 561–570.
8. **Witek, M. L.**, P. J. Flatau, J. Teixeira, and D. L. Westphal (2007): Coupling an ocean wave model with a global aerosol transport model: a sea salt aerosol parameterization perspective. *Geophys. Res. Lett.*, **34**, L14806, doi:10.1029/2007GL030106.
9. **Witek, M. L.**, P. J. Flatau, P. K. Quinn, and D. L. Westphal (2007): Global sea-salt modeling: Results and validation against multicampaign shipboard measurements. *J. Geophys. Res.*, **112**, D08215, doi:10.1029/2006JD007779.
10. Remiszewska, J., P. J. Flatau, K. M. Markowicz, E. A. Reid, J. S. Reid, and **M. L. Witek** (2007): Modulation of the aerosol absorption and single-scattering albedo due to synoptic scale and sea breeze circulations – United Arab Emirates experiment perspective. *J. Geophys. Res.*, **112**, D05204, doi:10.1029/2006JD007139.
11. Wells, K. C, **M. L. Witek**, P. J. Flatau, S. M. Kreidenweis, and D. L. Westphal (2007): An analysis of seasonal surface dust aerosol concentrations in the western US (2001–2004): Observations and model predictions. *Atmos. Environ.*, **44** (31), 6585–6597.
12. Markowicz, K. M., P. J. Flatau, J. Remiszewska, **M. L. Witek**, E. A. Reid, J. S. Reid, A. Bucholtz, and B. Holben (2008): Observations and modeling of the surface aerosol radiative forcing during the UAE2 experiment. *Journal of Atmospheric Sciences*, **65** (9), 2877–2891.

Conference materials:

13. “An integrated TKE based eddy-diffusivity/mass-flux scheme for the dry convective boundary layer” (oral presentation), **Witek, M. L.**, J. Teixeira, and G. Matheou, 19th Symp. on Boundary Layers & Turbulence, 2–6 August, 2010, Keystone, Colorado.
14. “Eddy-diffusivity/Mass-flux PBL parameterization: dry convection and stratocumulus cases” (oral presentation), **Witek, M. L.**, K. Suselj, J. Teixeira, and G. Matheou, Center for Multiscale Modeling of Atmospheric Processes Team Meeting, 12–14 January, 2010, La Jolla, California.
15. “Coupling an ocean wave model with a global aerosol transport model: a sea salt aerosol parameterization perspective” (poster), **Witek, M. L.**, P. J. Flatau, J. Teixeira, and D. L. Westphal, AGU Conference, 10–14 Dec 2007, San Francisco, USA.

16. "Global sea-salt modeling – results and validation against multi-campaign shipboard measurements" (poster), **Witek, M. L.**, P. J. Flatau, P. K. Quinn, and D. L. Westphal, INTROP Aerosols – Properties, Processes and Climate (APPC) conference, April 22–24, 2007, Heraclion, Crete.
17. "Long-Range Dust Transport from China, ADAM and ACE-Asia Perspective" (poster), **Witek, M. L.**, P. J. Flatau, D. L. Westphal, and J. Remiszewska, J., 2nd Workshop on Mineral Dust, 10-12 September 2003, Paris, France.